

Structure identical with that of *F. subrotunda*. Anal opening separated from the supra-anal by a very short mantle connection, with fine but distinct crenulations. Branchial with papillæ. Posterior margins of palpi connected for about one-third to one-half of their length.

Gills short and wide, the inner wider. Inner lamina of inner gill free from abdominal sac, except at its anterior end. In the female, all four gills have marsupial structure. None of the females was gravid.

Color of soft parts generally of the orange type, with foot, adductors and mantle margin often deep orange, rarely paler. In a few specimens the soft warts were pale brown to whitish. Gonads in most females intensely red (crimson); also in the males more or less red or pink, but in the latter they were in some cases brownish-gray.

(To be continued.)

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#### SPRING COLLECTING IN SOUTHWEST VIRGINIA.

BY CALVIN GOODRICH.

[Concluded from page 82.]

Some additions were made the next morning to Dr. Ortmann's Naiad list of the Clinch a mile and a half below St. Paul: *Micromya cælata* (Conrad), *Eurynia recta* (Lam.), and *Nephronaias ligamentina gibba* (Simpson), closely allied to *N. perdix* (Lea). *Io* at this point was seemingly all provided with tubercules. The shells were to be found on the larger stones on the up-stream side, or under an up-stream shelf, in the swifter water. An occasional one appeared in relatively quiet water. The white disintegrating shells of *Campeloma decisum* (Say), were common on the flood plain here.

Our next collecting spot was in the South Fork of the Powell river at Big Stone Gap, Wise Co., Va. The Doctor tackled the stream at once, while I climbed the big ridge, which hangs over it, in search of land material. The ridge proved to be entirely of sandstone and was as barren of molluscan life as the ordinary town lot, no bones at all being seen and only two living individuals, juvenile *Polygyræ*. Joining Dr. Ortmann after a couple of hours, I found

him happy over the plentifulness of the *Naiades*; they made up in this and in new interest what they lacked in variety. The most striking fact was that while *Eurynia vanuxemensis* (Lea), was unknown to the Clinch, it was one of the most common species of the Powell, at least at this station. *Io* was not seen. Two specimens only of *Anculosa subglobosa* were collected. *Pleurocera unciala*, of a heavier aspect than the species in the Clinch, and *Goniobasis simplex* were common. In flood pools, I was lucky enough to make several interesting finds: *Physa crandalli* Baker, *Planorbis bicarinatus* Say, *Lymnæa obrussa* Say, and, best of all, *Ancylus obscurus* Hald., which Mr. Walker tells me has been one of the long-lost species.

The weather turning stormy, we regretfully gave up plans for further collecting in the Powell river and in shoals of the Clinch which could be conveniently reached from Big Stone Gap. So in hopes of getting out of what might happen to be a localized storm area, we went on to Gate City, Scott Co., which brought us into the Holston drainage. Though assured that no shells had ever been seen in the Little Moccasin, which runs as a sort of decorative border to the corporation of Gate City, the results proved, as they usually do in such cases, that the resident sense of observation was of indifferent development. Two species of *Naiades* were found in this stream and, had the creek been clearer, probably more had been collected. The purple-black *Goniobasis spinella* Lea, was an easy mark in the yellow water, and many specimens were taken. The ubiquitous *Pleurocera unciala* was here and also *Goniobasis clavæformis* Lea, a species new to the expedition. *Physa heterostropha* Say, covered the wooden sides of the flume of a grist mill run by this creek.

Following the Little Moccasin slowly down stream, we came to the Big Moccasin creek. Almost at once Dr. Ortmann struck a pocket of clams and in the course of a few minutes had taken seven specimens. But luck quickly deserted, a thunder shower forcing us to the protection of a covered bridge. After it was over there was nothing to do but trudge home, as the water had risen and was carrying a heavy load of clay. The *Pleuroceratidæ* of the Big Moccasin seemed to be the three species of the Little Moccasin—exceedingly eroded—and one other species, *Anculosa subglobosa*.

The weather instead of improving grew constantly worse. The Doctor decided to go to points south for a try at the Holston river

and thence across the mountains into the Atlantic drainage, and I determined upon a search for land shells at Natural Tunnel, a few miles up the line from Gate City. It was the kind of day to bring the snails out, warm and steaming, and they did prove to be out, twenty species being bagged. Here, as in Russell county, *Polygyra profunda* had mostly dispensed with bands. But *Polygyra elevata* had assumed them. An interesting depauperate colony of this species was found on the face of the cliff between the natural and artificial tunnels. It was scarcely more than half the size of *elevata* living just out of the northern mouth of the natural tunnel. A mountain brook contained a small and handsome form of *Goniobasis aterina* Lea. One could stand upright and pick these little fellows from the rocks where they lived in the spray of the falls. From Stock creek, tributary to the Clinch and the stream which carved the natural tunnel, were taken *Pleurocera unciata*, *Goniobasis simplex* and *Goniobasis aterina*—this last surely the same or an offspring of *simplex*.

Acknowledgments are due to Mr. F. C. Baker, Mr. Bryant Walker, Mr. A. A. Hinkley and Dr. Victor Sterki for identifications, and to Mr. George H. Clapp for valuable comment on the land shells.

From a preliminary catalogue made by Dr. Ortmann, and to use which I have his kind permission, the following list of the collections of last May had been made:

*Fusconaia bursa-pastoris* (Wright). Clinch River, Cedar Bluff, Cleveland, Fink, St. Paul.

*Fusconaia estabrookiana* (Lea). "Synonyms, *fassinans* Lea and *fassinans rhomboideum* Simpson and others." Clinch, Cedar Bluff, Fink, St. Paul, Powell, Big Stone Gap, Big Moccasin, Moccasin Gap.

*Fusconaia appressa* (Lea) or *edgariana* (Lea). "Practically nothing but a flattened *edgariana*." Clinch, Cleveland, Fink, St. Paul.

*Crenodonta undulata* (Barnes). Clinch, Cleveland, Fink, St. Paul.

*Quadrula intermedia* (Conrad). "Possibly *tuberosa* Lea and *sparsa* Lea." Clinch, Cleveland.

*Quadrula cylindrica strigillata* (Wright). Clinch, Cedar Bluff, Cleveland, Fink.

*Pleurobema maculatum* (Conrad). Clinch, Cedar Bluff, Cleveland, St. Paul, north fork of Holston.

*Pleurobema oriforme* (Conrad). "Runs into *clinchense* Lea." Clinch, Cedar Bluff, Cleveland.

*Pleurobema* sp.? "Looks like a flattened *obliquum* Lam." Clinch, Cleveland.

*Pleurobema argentum* (Lea). "With many synonyms, such as *planior* Lea and *brevis* Lea." Clinch, Cedar Bluff, Cleveland, Fink, St. Paul, Powell, Big Stone Gap, Big Moccasin, Moccasin Gap.

*Elliptio gibbosus* (Barnes). Clinch, Cedar Bluff, Cleveland, Fink, St. Paul, also in middle fork of the Holston.

*Lastena lata* (Raf.). Clinch, Cleveland, St. Paul.

*Symphynota costata* (Raf.). Clinch, Cedar Bluff, Cleveland, Fink, St. Paul; also in middle fork of the Holston.

*Symphynota holston* (Lea). "Not an *Alasmidonta*." Clinch, Cedar Bluff, Powell, Big Stone Gap, Little Moccasin, Gate City.

*Alasmidonta minor* (Lea). Clinch, Cedar Bluff, Cleveland, Fink, St. Paul; also in the Holston.

*Alasmidonta marginata* (Say). Clinch, Cleveland, Fink, St. Paul; also in middle fork of Holston.

*Strophitus edentulus* (Say). Clinch, Cedar Bluff, Cleveland, St. Paul.

*Micromya caelata* (Conrad). Clinch, St. Paul.

*Ptychobranchnus phaseolus* (Hild.). Clinch, Cleveland, Fink, St. Paul.

*Ptychobranchnus subtentus* (Say). Clinch, Cedar Bluff, Cleveland, St. Paul; in middle fork of Holston.

*Nephronaias ligamentina gibba* (Simp.). Clinch, St. Paul.

*Nephronaias perdix* (Lea). Clinch, Cleveland, Fink, St. Paul.

*Medionidus conradicus* (Lea). Clinch, Cedar Bluff, Cleveland, Fink, St. Paul, Powell, Big Stone Gap, Big Moccasin, Moccasin Gap.

*Eurynia fabalis* (Lea). Clinch, Cleveland, St. Paul.

*Eurynia perpurpurea* (Lea). Clinch, Cedar Bluff, Cleveland, St. Paul.

*Eurynia nebulosa* (Conrad). Clinch, Cedar Bluff, Cleveland, Fink, St. Paul, Powell, Big Stone Gap, Big Moccasin, Moccasin Gap.

*Eurynia vanuxemensis* (Lea). Powell, Big Stone Gap, Little Moccasin, Gate City, Big Moccasin, Moccasin Gap. "Common in Holston."

*Eurynia recta* (Lam.). Clinch, St. Paul.

*Lampsilis ovata ventricosa* (Barnes). Clinch, Cedar Bluff, Cleveland, Fink, St. Paul.

*Lampsilis multiradiata* (Lea). Clinch, Cedar Bluff, Cleveland, Fink, St. Paul, Big Moccasin, Moccasin Gap.

*Truncilla capsaeformis* (Lea). Clinch, Cedar Bluff, Cleveland, Fink, St. Paul, Big Moccasin, Moccasin Gap.

In September, 1912, Dr. Ortman found a single specimen of *Truncilla haysiana* (Lea) in the Clinch river at Raven, Tazewell county, Va. This species was missed in the visit of last May.

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#### NOTES.

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ANOTHER NOTE ON MARIYN'S UNIVERSAL CONCHOLOGIST.—It may be of interest to those readers of THE NAUTILUS who are lovers of rare books, to learn that there is now a fifth copy of the "Universal Conchologist" in the United States. The volumes are large folio, bound in morocco and gold, and essentially like the magnificent copy in the Stanford University Library (see NAUTILUS, vol. XXII, 1908, p. 72), except that they comprise only the first 81 plates (vols. I-II). The plates are themselves in excellent preservation, but the sumptuous binding is badly worn. A prospectus of the work in French, dated 1787, is laid into the second volume. In neither this copy nor that at Stanford is there any plate of medals, as has been described for other editions. The volumes were acquired from a Paris dealer and are now in the private library of the writer.

The opportunity should be taken to correct a slight error which crept into my former note in these pages as above cited. It is the *fourth* volume of the Stanford University copy which lacks the explanatory table; vol. III appears to be complete.—S. S. BERRY.

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LAND SHELLS FROM ELLSWORTH, MAINE.—The following species were taken in a few hours' collecting October last along the shores of the Union River, just below Ellsworth, Maine. The shells were sent to Mr. George H. Clapp, who kindly identified them for me: